

WE CLAIM:

1. A transgenic non-human animal having cells comprising a transgene encoding a NADPH oxidase enzyme or dual oxidase enzyme.
- 5 2. The transgenic non-human animal of claim 1, wherein the animal is a mouse.
3. The transgenic non-human animal of claim 1, wherein the animal is heterozygous for the transgene.
- 10 4. The transgenic non-human animal of claim 1, wherein the animal is homozygous for the transgene.
5. The transgenic non-human animal of claim 1, wherein the transgene is
15 SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11 or SEQ ID NO:13.
6. The transgenic non-human animal of claim 1, wherein the transgene comprises SEQ ID NO:1.
- 20 7. The transgenic non-human animal of claim 1, further comprising a mutation resulting in a propensity for development of pathological conditions related to cell growth and proliferation.
- 25 8. The transgenic non-human animal of claim 2 further comprising a nonsense mutation in codon 850 of a murine adenomatous polyposis coli gene.
9. The transgenic non-human animal of claim 1, wherein the transgene is
30 operably linked to a tissue-specific promoter.

10. The transgenic non-human animal of claim 9, wherein the tissue-specific promoter is CX1, SV40 early promoter, cytomegalovirus promoter, mouse mammary tumor virus steroid-inducible promoter or Moloney murine leukemia virus.
11. The transgenic non-human animal of claim 9, wherein the tissue-specific promoter is CX1.
12. The transgenic non-human animal of claim 1, wherein the transgene is operably linked to a LoxP flox stop cassette.
13. The transgenic non-human animal of claim 12, wherein the LoxP flox stop cassette further comprises a marker.
14. The LoxP flox stop cassette of claim 13, wherein the marker is green enhanced fluorescent protein.
15. A method for identifying a therapeutic agent for use in treating inflammation, comprising:
- determining a first amount of inflammation in the non-human transgenic animal of claim 1;
 - administering an inflammatory compound to the non-human transgenic animal;
 - administering a test compound to the non-human transgenic animal;
 - measuring a second amount of inflammation in the non-human transgenic animal; and,
 - comparing the first amount of inflammation to the second amount of inflammation.

16. The method of claim 15, wherein the non-human transgenic animal is heterozygous for the transgene.
17. The method of claim 15, wherein the non-human transgenic animal is
5 homozygous for the transgene.
18. The method of claim 15, wherein the inflammation occurs in the colon.
19. A method for identifying a therapeutic agent for use in treating
10 pathological conditions related to cell growth and proliferation, comprising administering a test compound to the non-human transgenic animal of claim 7 and screening the non-human transgenic animal for the development of pathological conditions related to cell growth and proliferation.
- 15 20. The method of claim 19, wherein the pathological condition is colon cancer.
21. A vector comprising a transgene, wherein the transgene is SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5, SEQ ID NO:7, SEQ ID NO:9, SEQ ID
20 NO:11 or SEQ ID NO:13.
22. The vector of claim 21, wherein the transgene is operably linked to a tissue-specific promoter.
- 25 23. The vector of claim 22, wherein the tissue-specific promoter is CX1, SV40 early promoter, cytomegalovirus promoter, mouse mammary tumor virus steroid-inducible promoter, or Moloney murine leukemia virus.
24. A cell containing the vector of claim 21.

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25. A cell containing the vector of claim 23.

26. A cell or cell line derived from the transgenic non-human animal of claim 1.

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